

Appl. No. 09/974,511
Amdt dated: August 5, 2003
Reply to Office Action of March 6, 2003

Amendments to the Claims:

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1 to 23 (canceled).

C, Claim 24. (Currently Amended) A smelting reduction method comprising:

(a) charging a carbonaceous material and an ore containing iron into a reacting furnace to directly contact the carbonaceous material and the ore;

(b) reducing the ore until at least a part of the ore is metallized, the resultant reduced ore containing at least a part of the metallized metal being produced, and devolatilizing the carbonaceous material until a devolatilized carbonaceous material having a volatile content of the carbonaceous material is less than 10% is obtained;

the step (b) of reducing the ore and devolatilizing the carbonaceous material comprising reducing the ore and devolatilizing the carbonaceous material at a temperature of at least 950 °C in the reacting furnace;

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(c) charging the devolatilized carbonaceous material and the ore containing at least a part of the metallized metal from step (b) into a smelting furnace having a metal bath; and

(d) blowing a gas containing 20% or more of oxygen into the metal bath in the smelting furnace to produce molten iron.

Claim 25. (previously presented) The method of claim 24, further comprising charging carbonaceous material and pre-reduced ore into the metal bath of the smelting furnace.

Claim 26. (previously presented) The method of claim 24, wherein the carbonaceous material charged into the reacting furnace is in an amount which is stoichiometrically sufficient for reducing and metallizing all of the ore charged into the reacting furnace.

Claim 27. (previously presented) The method of claim 24, wherein the reacting furnace is a rotary kiln furnace or a rotary hearth furnace.

Claims 28 to 37 (canceled).

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Claim 38. (previously presented) The method claim 25, wherein the carbonaceous material charged into the smelting furnace is in an amount which is stoichiometrically sufficient for reducing and metallizing all of the ore charged into the smelting furnace.

Claim 39. (previously presented) The method of claim 38, wherein the reacting furnace is a rotary kiln furnace.

Claim 40. (previously presented) The method claim 38, wherein the reacting furnace is a rotary hearth furnace.

Claim 41. (previously presented) The method claim 24, wherein the carbonaceous material comprises char generated by devolatilizing coal.

Claim 42 (canceled).

Claim 43. (previously presented) The method of claim 42, wherein the temperature is 950°C.

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Claim 44. (previously presented) The method of claim 42,
wherein the temperature is 1,000°C.

Claim 45. (previously presented) The method of claim 42,
wherein the temperature is 1,200°C.

Claim 46. (previously presented) The method of claim 42,
wherein the temperature is 1,250°C.

Claim 47. (previously presented) The method of claim 24,
wherein the step (b) of reducing the ore comprises reducing the
ore until the ore has a metallization of 60% or more.

Claim 48. (Currently Amended) The method of claim 24,
wherein the melting furnace has a throat, whereat a combustion
from CO to CO₂ and H₂ to H₂O occurs, the method further comprising
the step of controlling a post the combustion rate within a range
to achieve a gas oxidizing degree of 40 to 80% at a the throat of
the smelting furnace, the gas oxidation degree being defined as
follows:

~~post combustion rate (%)~~ gas oxidizing degree in % = $\{ (CO_2 + H_2O) / (CO + CO_2 + H_2 + H_2O) \} \times 100$.